independently of whether the user movements of the stylus are strictly circular in nature. In the described embodiment, the movements of the crank handle **67** are displayed such that they appear circular, even if the stylus position is well outside of the crank handle's path of rotation. However, in alternative embodiments, the crank **62** can be displayed in a manner such that it appears to stretch and contract as it rotates such that the handle **67** appears to remain under the stylus **38** at all times.

After the angle by which the crank has been rotated ($\Delta\phi$) is calculated, the selected objects are rotated about the crank axle position by that amount. Step **179**. The result of these rotations is then displayed on the screen **42** of display assembly **20**. Thereafter, the total amount that the object has been rotated, Total ϕ is calculated and displayed in steps **181** & **182** respectively. The total rotation is calculated by adding the previous value of Total ϕ to the amount just rotated, $\Delta\phi$ That is:

$$\text{Total} = \text{Total } \phi + \Delta\phi$$

Once the value Total ϕ has been displayed, the CPU returns to step **171** and the rotation calculation and displaying process is repeated over and over until the user lifts the stylus **38** off of the screen **42**.

As seen in FIG. **4**, in the described embodiment, a small window **70** appears on the screen to inform the user of exactly how far the object has been rotated in the current rotation action. This gives the user feedback and permits more precise control of the rotation operation. Of course, in alternative embodiments, this feedback could be disabled.

Turning next to FIG. **12**, the scaling routine will be described. In fact, the scaling operation is quite similar to the rotating function. Therefore, as will be apparent to those skilled in the art, the actual code used to perform these functions can be simplified somewhat by combining the rotation and scaling operations. Like the rotating function, the scaling function begins by setting the values Total ϕ and $\Delta\phi$ equal to zero (steps **201** & **202** respectively). Thereafter, in step **204**, the value OriginalPT corresponding to the current stylus position is set equal to the value CurrentPT.

The CPU then interrogates the display assembly **20** to see whether the stylus is still on the screen (step **206**). If the stylus is no longer on the screen, the rotation operation is completed and the CPU terminates the scaling algorithm and returns to the beginning step **72**.

When the stylus **38** is still on the screen, the display assembly **20** informs the CPU of the current position of the stylus (step **208**). Using basic trigonometric calculations and knowing the current stylus position CurrentPT, the previous position of the stylus OriginalPT, and the position of the crank axle **65**, the CPU calculates the angle by which the crank has been rotated (step **209**). Thereafter, in step **211**, the scaling coefficient "SCALEcoff" is calculated using the formula:

$$\text{SCALEcoff} = 1 + \Delta\phi/360$$

In step **213**, the CPU determines whether the scaling coefficient SCALEcoff is greater than or equal to zero. If it is, the selected objects are scaled about their center point by a percentage factor of the scaling coefficient SCALEcoff (step **215**). On the other hand, if the scaling coefficient SCALEcoff is less than zero, then in step **216**, the selected objects are scaled about their center point by a factor of the inverse of the scaling coefficient. That is:

$$1/\text{SCALEcoff}$$

In either case, the properly scaled objects are displayed on the screen **42** to provide the user with immediate feedback about their actions. Further, in step **218**, the CPU **12** calculates the total angle by which the crank has been rotated. This is accomplished simply by adding the rotational angle change ϕ to the value Total ϕ. After the total rotation angle has been calculated, the overall scaling coefficient TOTALScale is calculated (step **219**). The overall scaling coefficient calculation uses the following formula:

$$\text{TOTALScale} = \text{Total } \phi \div 360.$$

If the crank has been rotated in a clockwise direction, then an enlargement has occurred and amount of scaling is displayed as a percentage scaling factor in either step **221** or **223**. The scaling factor for enlargements is calculated by multiplying the overall scaling coefficient times one hundred. That is: TOTALScale * 100. On the other hand, if the overall crank has been operated in a counterclockwise direction, then a reduction has occurred and the scaling factor is:

$$100/(1 + \text{TOTALScale})$$

This total scaling number can be displayed in the window **71** of FIG. **4**.

Although only a few embodiments of the present invention have been described herein, it should be understood that the present invention may be embodied in many other specific forms without departing from the spirit or scope of the invention. For example, in the described embodiments, a single crank can be used for both rotation and scaling operations. However, it is contemplated that separate cranks could be provided for each of these functions. Alternatively, the crank can be used to accomplish additional functions such as object distortion as well. Other suitable operations for the crank include adjusting the shading of an object, adjusting the position of an object, scaling an object in a single dimension, distorting an object, etc.

In the described embodiment, the crank icon is "stored" in a toolbox which can be opened by selecting the toolbox. However, it should be appreciated that the crank **62** can alternatively be positioned in any location that conforms with the basic user interface standards of a particular computer system or application software. Further, the rotation of the selected object in the described embodiment was equal to the rotation of the crank handle **67**. However, the rotational movements of the selected object can be arranged to be any function of the handle movements.

From the foregoing examples, it should be apparent that the present examples are to be considered as illustrative and not restrictive, and the invention is not to be limited to the details given herein, but may be modified within the scope of the appended claims.

What is claimed is:

1. A method for manipulating an object on a display of a computer system comprising the steps of:

selecting said object on said computer display;

directing a pointing means towards a portion of a manipulating tool displayed on said computer dis-